

#### ABSTRACT OF THE DISCLOSURE

Improved Ni catalysts for hydrogenation reactions are disclosed. The catalysts are useful for hydrogenation such as selective hydrogenation of acetylenic impurities in crude olefin and diolefin streams. The catalysts are prepared by depositing nickel on a porous support which has the following specific physical properties; BET surface area of from 30 to about 100 m<sup>2</sup>/g, total nitrogen pore volume of from 0.4 to about 0.9 cc/g, and an average pore diameter of from about 110 to 450 Å with or without modifiers of one or more elements selected from the group consisting of Cu, Re, Pd, Zn, Mg, Mo, Ca and Bi.